Cryptozoology, 6, 1987, 85–87
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INVESTIGATIONS AND SONAR TESTING AT LAKE CHAMPLAIN, 1987

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INTRODUCTION

In July, 1987, the authors collaborated on fieldwork at Lake Champlain. This work grew out of previous seasons' activities coordinated by Smith regarding the supposed large, unknown "Loch Ness-like animals" reported at the lake and popularly referred to as "Champ" (Richard D. Smith, 1986, Investigations and Systems Tests in the Lake Champlain Basin, 1986, *Cryptozoology*, Vol. 5: 85–88).

The intent of the 1987 work was: 1) To test a shore-based chart recording sonar system capable of extending a sonar beam horizontally across the lake's central basin; 2) to make additional vertical sonar chart recordings of the lake basin from a boat; 3) to gather any information on previously unrecorded Champ sightings, and to relay such information to the Lake Champlain Phenomena Investigation (LCPI); and 4) to gather any information of interest to professional scientists and/or local historians.

Our 1987 fieldwork consisted of 14 days on site. Six days were spent in the execution of the primary sonar activities, which were directed by Konrad. The remaining days were devoted to the additional activities, coordinated by Smith. Assisting in operations were Ike and Lois Blonder, Phil Keller, Werner Larsen, Wendy Lathrop, Margaret Light, and Gary Mangiacopra. Katherine Teetor was most helpful during inquiries on the Vermont side of the lake. Morris and Ellin Glenn kindly allowed us to deploy the land-based sonar from their property near Essex, New York.

Arthur Cohn, director of the Lake Champlain Maritime Museum, Basin Harbor, Vermont, and Joseph Zarzynski, director of the LCPI, provided valuable suggestions during our selection of sonar work sites. We also acknowledge the encouragement and support shown by Mr. Blonder, Ms. Light and Robert Durant.

NARRATIVE DESCRIPTION

The principal sonar was a 112 kHz unit designed by Konrad, used in conjunction with a line scan OSR-219 recorder. The sonar produced a source level of 235 dB with respect to one micro Pascal at one meter. The transducer, which served both for transmitting and receiving, was 12 inches square and weighed 60 pounds. Approximately 5 kilowatts of pulse power was fed to

the transducer during the 5 millisecond transmit period. Five hundred feet of coaxial cable connected the transducer to the sonar unit ashore.

A dive mechanism to scan the transducer vertically through 15 degrees was designed by David Olsen. We had intended to mount the transducer on a steep underwater drop-off immediately adjacent to the deepest central channel of the lake. However, logistical considerations led us to opt for a more easily worked site near our base camp during this season's testing of the system. The transducer was suspended 15 feet beneath a canoe moored in 30 feet of water, and 350 feet off a shore that sloped gently into the central channel. Depth contours taken of this location using the secondary sonar unit (an Apelco/Raytheon 201-C chart recorder) revealed that the transducer's narrow 4.5 degree beam would most likely expand above the bottom topography, and not cause early intersection of the signal with the bottom before reaching into the central channel (assuming an isothermal water temperature profile). The scanning motor was therefore not attached to the transducer. A more fixed mounting for the transducer would have been desirable. However, the moored canoe's position shifted only gradually hour-to-hour with prevailing winds, so this deployment was quite adequate for our tests.

As in previous seasons, shore watching was not emphasized, but expedition members carried a variety of still, motion picture, and video cameras in the event of a chance Champ sighting.

Scans with the Apelco sonar unit sweeping vertically from a moving boat were carried out near Essex, New York, Thompson's Point, Vermont, and Basin Harbor, Vermont.

Results

The primary sonar system was operated for several periods over four days. The results were not satisfactory due to two factors. We had anticipated that water temperature differences between the epilimnion and hypolimnion strata might act to refract the horizontally aimed sonar signal downward. This proved to be the case. We were able to record only at a distance of some 1,250 feet, not at the equipment's three-mile potential. Ray trace calculations based on in-situ temperature versus depth measurements—together with the historical data of Henson and Potash (personal communication)—generally supported the observed sonar range limit. An unanticipated problem was that high humidity caused the chart paper to bend and soften, causing the recording stylli to tear into the paper on several occasions. Although we appear to have recorded some aquatic life, we were unable to satisfactorily calibrate the system on site. Any interpretation of results from the primary sonar would thus be speculative. The secondary unit recorded fish and what appear to be two known boat wrecks.

Two other results are presented here for the interest they may have for cryptozoological fieldworkers in general.

As in previous seasons, information on unrecorded Champ sightings was gathered. Information on three sightings (one from this season, two from years past) was relayed to the LCPI, and an interview concerning a fourth was conducted at Zarzynski's request. It should be stressed that the LCPI is vigorous in its efforts to obtain and record eyewitness testimony. Even in the presence of thorough, ongoing efforts, it is still possible to uncover hidden accounts of "hidden" animals because: 1) researchers and media representatives do not automatically hear of all sightings, and 2) eyewitnesses are often too reticent or too busy to answer inquiries immediately. Thus, to the oft-stated skeptical inquiry "If they exist, then why aren't these animals seen more often?," one may answer: "Apparently they *are*."

Although no sightings were made of Champ animals, Smith photographed a beaver that had entered the Charlotte, Vermont, anchorage area from an adjacent estuary, and had momentarily appeared at the surface. This incident demonstrates that, if one wishes to photograph elusive animals, it is not sufficient to simply "have a camera along." The camera must be on one's person when near the animals' supposed habitat.

Future Plans

The authors believe there will be great value in establishing a sonar "curtain" across the lake's central basin, and recording for periods of twenty-four hours or longer. Large, free-swimming animals, if they exist in Lake Champlain, could be detected by this method. Clues to their behavioral patterns could thus be gleaned. Optimal deployment will be necessary, and the problems encountered this season will need to be addressed.

A small research vessel was acquired this year. The strategy of underwater video camera deployment tested last season (see Smith, above) will be resumed in 1988. Konrad is also designing a system of imaging sonar which, if successfully developed, will greatly increase our ability to "see" in the lake's dark, deep waters.

Liaison will be maintained with the LCPI, professional scientists, and local researchers.